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The Key Biodiversity Areas Project in Iraq: Objectives and scope 2004–2008

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Abstract

Nature Iraq conducted biological surveys throughout Iraq during the 2004 to 2008 period under the Key Biodiversity Areas (KBA) Project. This continuing initiative comprises the largest and most comprehensive biological surveys to take place in Iraq in well over 25 years. Under the KBA Project in Iraq, Nature Iraq in cooperation with the Iraqi Ministry of Environment, has visited over one hundred sites in southern Iraq and in Kurdistan in northern Iraq to survey plants, fish, reptile, bird and mammal species. In addition, water quality physical parameters, sediment, plankton and benthic invertebrates were examined at these sites to determine the overall health of key habitat areas. Birds have been a primary focus of the surveys. This has involved the collection of data on these potential sites of key biological diversity including the identification of species, population counts and information on how species are using a site (e.g. breeding, feeding, migration, etc.). This paper provides an overview of this continuing project that will, over time, permit the refinement of data and the survey of more of Iraq as security improves within the country. The paper also summarizes current recommendations for the management of some of the KBA sites in Iraq.

Keywords

Key Biodiversity Areas, biodiversity surveys, Kurdistan, southern Iraq

Introduction

The marshes of southern Iraq have faced significant environmental change in the last 20 years, as documented by the United Nations Environment Program, UNEP (Partow 2001). This was driven by government-directed drainage of the marshes that caused extreme changes in water quality, biota and, most importantly, the lives of several hundred thousand local people. The severe impact on people has been documented by the AMAR International Charitable Foundation (Nicholson and Clark 2002). The marshes were also affected over this time by the reduction in water flow into the Euphrates and Tigris rivers through construction of hydroelectric and reservoir facilities throughout the countries of the Tigris-Euphrates Basin (Iran, Iraq, Kuwait, Syria and Turkey).

It is estimated that, within only a few years, up to 90% of the original wetland area of the southern marshes of Iraq was turned into semi-desert. The systematic drainage of these marshes impacted all aspects of the biological system - noticeably the bird, fish, plant and other wildlife species of the area. Since 2003, however, up to 58% of these marshes had been re-flooded (as of August 2007), helping to restore the ecological and human socio-cultural web of the region.

It is not known if this re-flooding can be considered sustainable due to the uncertainty of water availability year-to-year in Iraq. For several years, water levels had been favorable, in part due to high seasonal snowfalls in neighboring nations and in northern Iraq, the source areas of much of the water available to the marshes (Alwash Iraq Foundation, personal communication, 2005; Partow, UNEP, personal communication 2005). However, in 2008 water levels in the Marshland areas declined due to drought conditions.

During the 1980 to 2003 period, assessment of the impacts on wildlife populations was not feasible. Surveys to capture biodiversity data have now resumed as an important component of the programs of Nature Iraq in association with Italian, Canadian and other funding agencies. This work was directly implemented in concert with the Iraqi government, non-government organizations (both inside Iraq and internationally) and university partners. This support has increasingly enabled capacity building and training projects (such as reported by Evans 2004, and Porter and Scott 2005) over the 2004 to 2008 period for Iraqi scientists and managers who seek to restore the ecological character of the southern marshes of Iraq. Work was also initiated in Kurdistan in northern Iraq in the winter of 2007. The Nature Iraq KBA project has assisted in the generation of better understanding of biodiversity and management needs, and the implementation of wildlife surveys, monitoring programs and marshland restoration and management initiatives in Iraq.

This paper summarizes a more detailed report submitted to the Government of Iraq (Rubec and Bachmann 2008). It is hoped that this paper and its associated report will collectively assist in the conservation of the marshes by increasing cooperation between government, non-government and university stakeholders in Iraq.

The Key Biodiversity Areas Program

The development of reliable information on the status of the Key Biodiversity Areas of Iraq is designed to support long-term restoration and management planning for important habitats such as the southern marshes of the country. The definition of "Key Biodiversity Areas" closely follows that developed and implemented by BirdLife International (BLI) with national partner agencies, including Nature Iraq, in several countries. This definition recognizes that biological richness and importance are "more than birds", thus extending the highly successful BLI international program for Important Bird Areas (IBAs). The KBA program in Iraq, as discussed below, builds on the IBAs Program led in many countries by BirdLife partner organizations. The Mesopotamian Marshes for example support at least 34 species of conservation concern including eight globally threatened bird species (Salim et al. 2009, this volume) including endemics such as the Iraq Babbler and the Basra Reed Warbler (Stattersfield et al. 1998).

Objectives

The objectives of the KBA field program are:

- To undertake annual winter surveys (between the months of December and February 2005 to 2008) and annual summer surveys (between the months of May and July 2005 to 2008) of as many of the KBA sites as possible;
- To record information on the status of habitats and threats to these sites;
- To provide advice to the Ministry of Environment and other Iraqi stakeholders on the future management relevant to restoration of healthy ecosystems and communities of each KBA site; and
- To publish relevant scientific and technical papers and reports on this work.

KBA Sites

Early on in this Project, decisions had to be made as to which sites would be the focus of the field studies. It was agreed to build upon known, published information on sites of biodiversity interest in Iraq. The chosen locations for KBA field studies were initially based on the Important Bird Areas (IBAs) of Iraq as published by Evans (1994) and supplemented by a listing of potential Wetlands of International Importance (meeting thus the site criteria of the Ramsar Convention) in Iraq by Scott (1995).

Building upon the same basic principals as IBAs but not restricted just to bird species, KBAs are seen as the building blocks of landscape-level conservation planning, according to the World Conservation Union (IUCN 2007).The Iraqi KBAs are thus considered to be sites of global significance for biodiversity conservation as they readily meet the IUCN criteria based on a framework of vulnerability and irreplaceability (IUCN 2007).

Under vulnerability criteria, any sites where critically endangered, endangered or vulnerable species occur can be listed as a KBA site. Irreplaceability criteria are concerned with those sites that hold restricted-range species, species with large but clumped distributions, globally significant congregations, globally significant source populations and bioregionally-restricted assemblages.

Within the southern marshes of Iraq, Key Biodiversity Area (KBA) sites that were chosen are those previously known to be particularly important for breeding and wintering birds and that had been the subject of re-flooding since 2003. A total of 43 possible KBAs were thus selected in Iraq. Of these KBA sites, 26 are located in southern Iraq (see Fig. 1 and Table 1 below). Sites numbered 17 to 42 were the initial focus of the southern field program. These sites occur mainly in the south and are concentrated in Missan, Thi Qar and Basrah Governorates. Four sites were located in Kurdistan in northern Iraq (one of these represents three distinct areas) in the governorates of Sulaimani, Erbil and Dohuk and were first surveyed in the winter of 2007.

Due to the extensive time that had passed since these sites had been initially visited and/or evaluated as IBA sites, it is now accurate to call them potential KBA sites. Most of the sites had not been surveyed since at least 1979 or earlier. Upon evaluation of these sites, it was felt that some might no longer meet IBA and KBA criteria due to extensive ecological damage or change. It was also recognized from the outset that security conditions, military restrictions, and other factors could significantly affect the planning and access to sites in this project. Thus, it was not expected that all potential KBA sites might be fully surveyed, as would be ideal. Indeed, due to these types of limitations, no work was done at several of the listed sites (particularly No. 017, 018, 019, 020, 021, 022, and 027). KBA sites numbered 001 to 016 lie in the northern and western areas of Iraq and were deemed beyond the scope of the initial work. However, several of these sites (Sites 001, 002, 003, 004a, b, c as well as Mosul Lake) are now included in the field program in the Kurdistan Region of northern Iraq. Additional sites were added based on local knowledge and stakeholder input and are to be considered potential KBA sites until a final assessment is complete. Marine sites at the mouth of the Shatt al-Arab are also known to have high biodiversity value particularly for avian species. However, the extreme sensitivity of this military zone has precluded most scientific work in the immediate area beyond several Shatt al-Arab sites (No. 40–42) visited sporadically to date by Nature Iraq (see Fig. 1, Table 1).

Field study locations

An initial February to March 2005 survey was restricted to seven KBA sites in southern Iraq. It was limited by practical and security issues in that period and seen as a start-up, experience-building exercise. However, useful data were collected nonetheless. The winter of 2005 survey included portions of KBAs No. 030, 032, 033, 034, 036, 038 and 039 (see Table 1). All other southern KBA sites were included in the subsequent surveys, except where security concerns interfered.

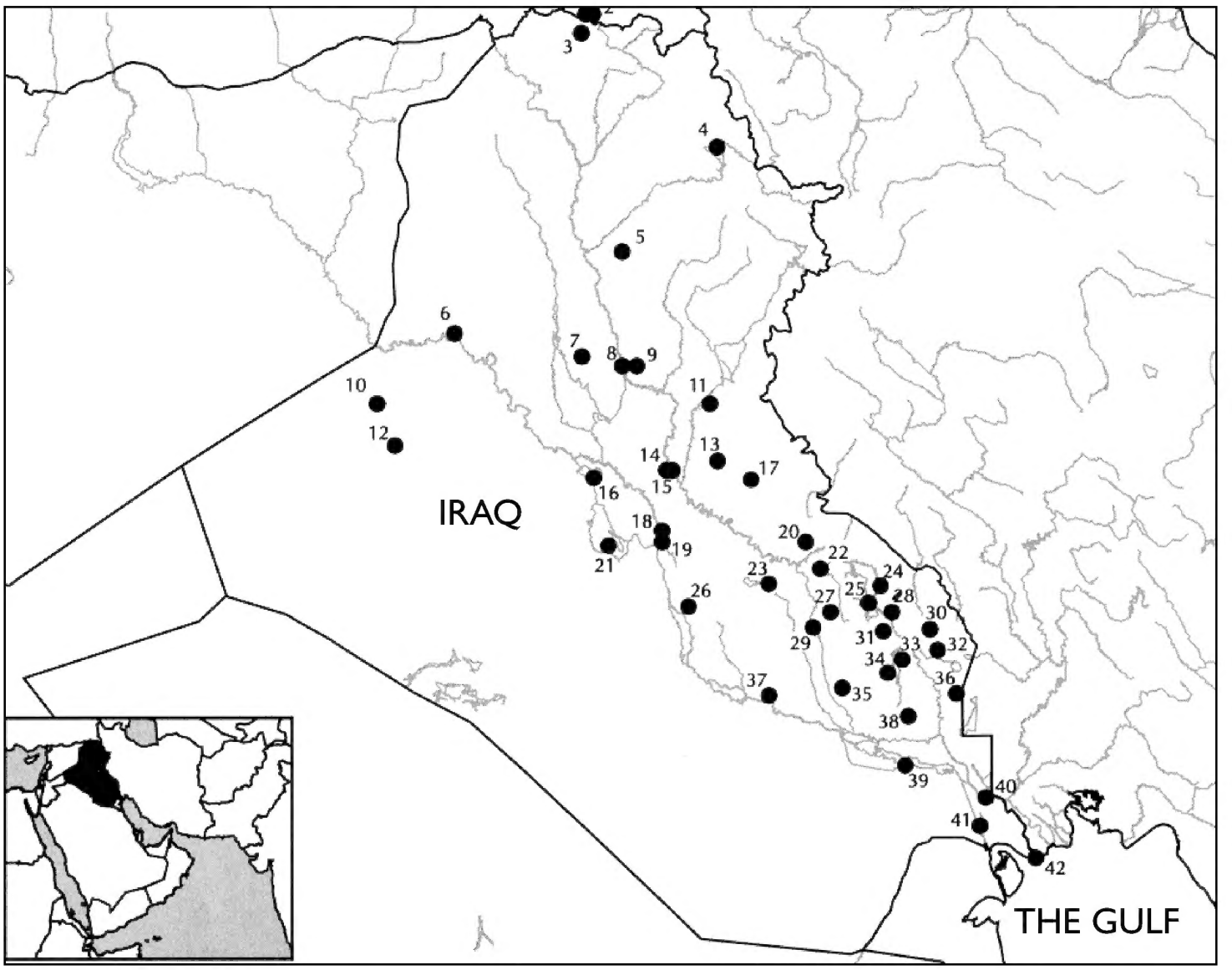

Figure 1. Map of the IBAs of Iraq, From Evans (1994).

In order to facilitate field survey logistics, seven major wetland areas in the south were defined (Figs 2 and 3 show two examples of these areas): Hammar Marshes (HA), Central Marshes (CM), Hawizeh Marshes (HZ), Middle Euphrates Marshes (ME), Seasonal Marshes (SM), Shatt Al Arab Marshes (SA), Khor Az Zobayr Marshes (KZ). In Kurdistan, northern Iraq, sites were organized by Governorate (Figs 4 and 5 show two examples of these areas): Sulaimani (S), Erbil (E), Dohuk (D). These areas are all identified on the map in Fig. 6.

Biodiversity observations

The KBA team recorded field observations during winter and summer in 2005, 2006, 2007 and 2008 that focused on birds, fish, zooplankton, macrophytes, phytoplankton, sediments and water quality. Anecdotal mammal, reptile and amphibian observations were also included. In 2008, the southern survey was reduced to bird, habitat and vegetation surveys. Papers and reports on these surveys are currently in preparation or in press.

Table 1. Key Biodiversity Areas Iraq visited by KBA the Team (after Evans 1994 and Scott 1995).

Site Name and Code*	Area (ha)	Latitude/ Longitude	Habitat Type	Governorate
Kurdistan Sites				
IBA 001. Beanavi (Benavi)	600	37°20'N, 42°35'E	Rocky wooded valley	Dohuk
IBA 002. Dori Serguza	400	37°13'N 43°28'E	Valley with springs and woodland	Dohuk
IBA 003. Ser Amadiya (Ser Amadia)	6,500	37°10'N, 43°22'E	Cliffs and valleys	Dohuk
Scott: Aski Mosul Reservoir (Great Saddam Lake) (not listed as IBA in Evans, 1994)	Lake is 30 km long	36°32'N, 42°45'E	Reservoir	In North near Mosul
IBA 004. (a) Bakhma, (b) Dukan and (c) Darbandikhan Dams;	40,000	36°10'N, 44°55'E	Reservoirs, flood plain and valleys	Dohuk, Erbil, and Sulaymaniyah
Scott: Dukan Reservoir	25,000 ha lake which is 30 km long by 15 km wide	36°10'N, 44°55'E		
Scott: Darbandikhan Reservoir	7,500 ha lake which is 30 km long by 10 km wide	35°10'N, 45°50'E		
Sites in Southern Iraq				
IBA 023. Hor Delmaj; Scott # 14. Hor Delmaj (Dalmaj Marsh)	100,000	32°20'N, 45°30'E	Freshwater lake	Wasit
IBA 024. Hor Sarut;	50	32°19'N, 46°46'E	Reedbed and lake	Missan
Scott # 21. Hor Sarut (Saaroot)	Not listed	32°07'N, 46°46'E		
IBA 025. Hor Al Sa'adiyah; Scott # 20. Hor Al Sa'adiyah (Sa'diya)	140,000	32°10'N, 46°38'E 32°01'N to 32°25'N; 46°22'E to 46°44'E	Freshwater lake	Wasit
IBA 026. Hor Ibn Najim; Scott # 12. Hor Ibn Najim (Ibn Najm Marsh)	10,000	32°08'N, 44°35'E	Seasonal freshwater lake	Babil
IBA 028. Hor Al-Haushiya - Al Kumait Ponds, Ali Sharqi Ponds;	200	32°05'N, 46°54'E	Artificial ponds	Missan
Scott # 22. Hor Al Haushiya	Not listed			
IBA 029. Shatt Al Gharraf;	125+	31°57'N, 46°00'E	Ponds and seasonal wetlands along a waterway	Wasit and Thi Qar
Scott # 18. Shatt Al Gharraf (Gharraaf River)	not listed			
IBA 030. Hor Chibayish Area; Scott # 23. Hor Chubaisah Complex (Sinnaaf Area)	27,500	31°56'N, 47°20'E 31°53'N, 47°18'E	Freshwater lakes and marshes	Missan
IBA 031. Hor Sanniya; Scott # 24. Hor Sanniya (Saniya)	40,000	31°55'N, 46°48'E	Freshwater lakes	Missan

Site Name and Code*	Area (ha)	Latitude/ Longitude	Habitat Type	Governorate
IBA 032. Hor Om Am Nyai -Suweid, Sudan Marshes; Scott # 29. Suweid Marshes (Umm An Ni'aaj)	15,000	31°45'N 47°25'E	Wetlands and open water	Missan
IBA 033. Hor Al Rayan and Umm Osbah - Maymund and Salam Marshes; Scott # 25. Hor Al Rayan and Hor Umm Osbah (Rayan)	25,000	31°40'N, 47°01'E 31°53'N, 47°02'E	Sedge marsh, lagoons and reedbeds	Missan
IBA 034. Hor Auda; Scott # 26. Hor Auda (Auda Marsh)	7,500	31°33'N, 46°51'E	Freshwater marshes and lakes	Missan
IBA 035. Hor Uwainah - Shatra Marshes; Scott # 19. Hor Uwainah - Shatra or Chamuqa Marshes (U'wainah Marsh near Shatra)	32,500	31°25'N, 46°20'E	Lakes and marshes	Thi Qar
IBA 036. Hor Al Hawizeh - Hor Al Azim in Iran portion Scott # 30. Hor Al Hawizeh (Hawizeh Marshes)	220,000	31°22'N, 47°38'E 31°00'N to 31°45'N; 47°25'E to 47°50'E	Freshwater marshes	Missan, Basrah
IBA 037. Hor Lafta Scott # 13. Hor Lafta (Lafta Marsh)	20,000	31°21'N, 45°30'E	Isolated freshwater lake on saline plain and dunes	Muthanna
IBA 038. Central Marshes - Amara Marshes Scott # 27. Central Marshes	300,000	31°10'N, 47°05'E 30°50'N to 31°30'N'; 46°45'E to 46°25'E	Open water and freshwater marshes	Missan, Thi Qar, Basrah
IBA 039. Hor Al Hammar Scott # 28. Hor Al Hammar (Hammar Marshes)	350,000	30°44'N, 47°03'E 30°35'N to 31°00'N; 46°25'E to 47°45'E	Marshes and lakes	Thi Qar, Basrah
IBA 040. Shatt Al Arab Marshes Scott # 31. Shatt Al Arab Marshes	165 km length of river	30°27'N, 47°58'E Stretches from 31°00'N, 47°25'E to 29°55'N, 48°30'E	Riverine floodplain wetlands and reed marshes	Basrah
IBA 041. Khor Al Zubair Scott # 32. Khor Zubair (Khor Al Zubayr)	20,000	31°12'N, 47°54'E	Tidal inlet and intertidal mudflats	Basrah
IBA 042. Khor Abdallah Scott # 33. Khor Abdalah and the Fao Area	126,000	29°55'N, 48°32'E	Swampy grass flats (90,000 ha) and intertidal mudflats (36,000 ha)	Basrah

*IBA numbers refer to Evans (1994) numbering system, Scott number refers to Scott (1995) numbering system. Name in parentheses, where present, represent the Nature Iraq name for the site.

Figure 2. Central Marshes (CM), December 2007 (photo M. Shebel).

Definition of management issues

In November 2004, a workshop was organized with Iraqi specialists in environmental management as part of a training course for prospective KBA team members (Evans 2004). A priority setting exercise on the status and management options for KBAs in Iraq was conducted.

Participants expressed their views with regard to the marshes of Iraq. The various views highlighted the richness of natural and cultural resources in the area. In 2004, they felt that law enforcement was a key element for the conservation successes as this had previously proved effective in Iraq. However, due to the politically unstable conditions that much of Iraq is now witnessing, these enforcement efforts have virtually collapsed.

Participants suggested a series of management options for KBA sites, including:

- Establish a support group or council at each KBA for enhancing conservation and sustainability;
- Enhance the roles and involvement of local communities in decision-making;
- Involve various governmental institutions;
- Promote job creation;
- Promote landscape restoration;
- Undertake awareness building;

Figure 3. Hammar Marshes (HA), December 2007 (photo M. Shebel).

– Ensure improved project coordination;
– Build political and cultural support.

There was strong agreement between participants that the marshes faced a wide array of threats, including:
– Fires;
– Date palm plantation removal;
– Dumping and waste accumulation;
– Construction of dams and impoundments;
– Unsustainable agricultural, hunting and fishing practices;
– Water pollution;
– Wildlife disturbance during breeding seasons;
– Habitat loss and fragmentation;
– Road construction and industrial development;
– Lack of legal land titles.

It was indicated that there should be a mechanism for conflict resolution with local communities. This could be based on the number of affected families and type of lost

Figure 4. Peramagroon Mountain, January 2008, Sulaimani – S (photo K. Ararat).

opportunities for that local community. Also, it was pointed out that there was a need to have a National Wetland Strategy and national accession to the Ramsar Convention on Wetlands (which took place in Iraq in 2007). Integration within other global conventions such as the Convention on Biological Diversity could also provide a strong advocacy tool. Discussions shed light on identification of the marshes as a special development area. Participants also agreed that attention should be made to transboundary management issues for the Hawizeh Marsh (e.g. for the marshes area shared with Iran) to address threats to the ecological character of this area. Hawizeh Marsh is now Iraq's first Ramsar site and a draft management plan has been completed for the area (Rubec 2008).

Discussion of management recommendations for southern KBA sites

Conservation actions that are recommended for each of the priority categories, using a weighted point assignment process developed at the 2004 workshop (Evans 2004) are presented below in Table 2. In addition, a summary of the KBA sites felt to be "critical", "urgent" or "high" in terms of conservation priority and notes on the current habitat conditions at surveyed sites are presented in Table 3. The sites are thus ranked as: Critical priority sites that require intensive and immediate action (over 39 points);

Figure 5. Gara Mountain, March 2007, Dohuk – D (photo by K. Ararat).

Urgent priority sites that require ongoing action at a less intensive level (30–39 points); or High priority sites that require lower-level actions (20–29 points).

Conclusions

Comprehensive ecological survey work is still not possible in all areas of Iraq due to security concerns over much of the country. Hence, many sites cannot be visited or visited systematically. Often those sites that are visited cannot be completely assessed due to restrictions on available time or other logistical concerns related to security problems. Despite these factors, the Nature Iraq KBA work has been an important step in assessing Iraq's biological diversity. Over time, this will benefit the conservation and management of this national resource. Nature Iraq has collected valuable data on important ecosystems now in the process of undergoing extensive ecological recovery after decades of degradation and destruction.

The data collected over the past four years and from up-coming surveys will provide critical information as Iraq engages the international community in agreements such as the Convention on Wetlands (Ramsar Convention), the Convention on Biological Diversity (CBD), the Convention on the International Trade of Endangered Species

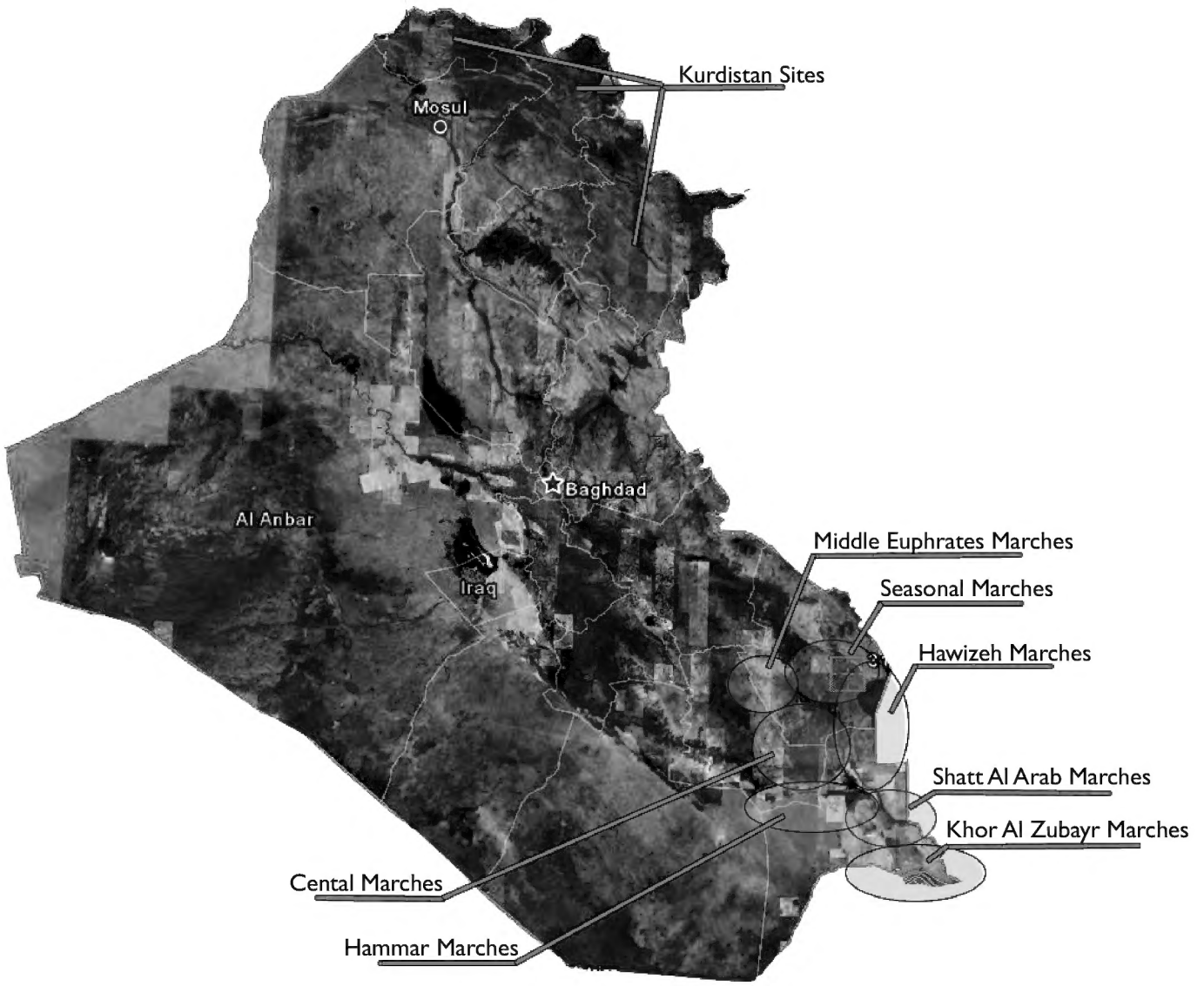

Figure 6. The seven major wetland survey areas of southern Iraq and the locations of survey sites in Kurdistan, northern Iraq.

Table 2. Recommended conservation actions for all sites.

Critical Sites	**Critical and Urgent Sites**	**Critical, Urgent and High Priority Sites**
Identify actual and potential stakeholders for KBA conservation	Develop and maintain Site Support Groups	Monitoring
Provide alternatives for local communities living in and around KBAs, through promotion of Site Support Groups	Socio-economic surveys	Awareness raising for decision-makers
Conservation projects	Education and awareness raising	Enforce conservation policies
Integrated resources and ecosystem management	Local and national advocacy for IBA conservation	Promote ecotourism
Develop and implement management or action plans	--	Advocacy for protection status
Land purchase or rental	--	Detailed surveys
Habitat restoration and rehabilitation	--	Lobby for appropriate legislation on site conservation

Table 3. Summary of 2004 conservation rankings for KBAs in Iraq based on threats and biological importance for birds, and 2008 current habitat status.

IBA Site No. and Name*	2004 Total Points Ranking For Conservation Action	2004 Categorization	Current Habitat Status (2008)
KBA sites assessed in 2004 conservation ranking exercise			
022. Hor al-Abjiya and Hor Um al-Baram	25	High	Unknown
024. Saaroot	21	High	Seasonally flooded in 2005, 2006, 2007
025. Sa'idya	26	High	Dry, now used for agriculture
027. Hor al-Hachcham and Hor Maraiba	26	High	Unknown
028. Hor al-Haushiya	25	High	Dry with saline soils and halophytic vegetation. Poor security.
030. Sinnaaf	25	High	A dry site with occasional winter flooding
031. Saniya	28	High	Dry with high security risks
032. Umm An Ni'aaj	31	Urgent	Brackish water marsh (fresh waters in some areas in winter) with good plant, fish and bird diversity
033. Rayan	33	Urgent	Flooded in 1st survey, dry in 2nd survey
034. Auda Marsh	34	Urgent	Flooded but affected by eutrophication because of lack of water flow-through
035. Al Shatrah - West of Al Riwaiya (Hor Uwainah)	33	Urgent	Dry site with high security risks
036. Hawizeh Marshes	41	Critical	Flooded
038. Central Marshes	39	Critical	Shallow waters with very poor quality
039. Hammar Marshes	46	Critical	West portion flooded; centre portion is now a small lake; east portion is flooded tidally
KBA Sites Not Assessed in 2004 Conservation Ranking Exercise			
001. Benavi		--	Forested mountain site
002. Dori Serguza		--	Forested mountain site in Dohuk governorate – not assessed & has incorrect gps location.
003. Ser Amadia		--	Forested mountain site
004. Bakhma, Dukan and Darbandikhan		--	Bakhma-Big Zap River with incomplete dam structures; Dukan and Darbandikhan – Large reservoirs
Mosul Lake		--	Large reservoir

IBA Site No. and Name*	2004 Total Points Ranking For Conservation Action	2004 Categorization	Current Habitat Status (2008)
023. Dalmaj Marsh	--	--	Flooded/Current Status Unknown
026. Ibn Najm	--	--	Flooded
029. Gharraf River	--	--	Flooded
037. Lafta Marsh	--	--	Dry/Current status unknown
040. Shatt al-Arab Marshes	--	--	Flooded
041. Khor al-Zubayr	--	--	Marine
042. Khor Abdallah	--	--	Marine/Current status unknown

*Using Evans (1994) site codes and Nature Iraq site names (where assigned).

(CITES), the Convention on Migratory Species (Bonn Convention) and others. Nature Iraq will continue to maintain and update information on these and other sites within the country and will make data available to the Iraqi government, stakeholders and other interested organizations and agencies concerned with biodiversity in Iraq.

The biological diversity of the country is not contained within Iraq alone but is shared with the region and the globe. As a result, Nature Iraq will be incorporating many of its key observations into internationally shared sources such as the Worldbird Middle East Database, an Internet-based spatial database about birds provided by the Royal Society for the Protection of Birds (United Kingdom) and BirdLife International. Through these and other methods, Nature Iraq hopes to share information, resources and expertise with regional and international organizations that can assist as partners with Iraqi conservation efforts.

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